IN THE CLAIMS

The claims and their status are set forth below:

1.   (currently amended)   A method for acquiring a projection data set, comprising:

rotating ~~a gantry comprising~~ a distributed X-ray source about a volume of interest, wherein a rotational period of the <u>distributed X-ray source</u> ~~gantry~~ is greater than eight seconds and wherein the distributed X-ray source comprises a plurality of addressable X-ray focal spots;

emitting X-rays from the distributed X-ray source; and

acquiring a projection data set comprising a plurality of projections generated from the emitted X-rays.

2.   (currently amended)   The method as recited in claim 1, further comprising:

generating a set of interpolated projections by interpolating the projection data set using a set of concurrently acquired phase data and frequency content of the projection data set, wherein each interpolated projection characterizes the projection data set at a view location of the <u>distributed X-ray source</u> ~~gantry~~ and at a particular time; and

reconstructing the set of interpolated projections to generate one or more images.

3.   (original)   The method as recited in claim 2, further comprising:

associating two or more images to generate a volume rendering.

4.   (original)   The method as recited in claim 2, wherein the volume of interest comprises a heart having a cardiac period.

5.   (currently amended)   The method as recited in claim 4, wherein a rotational period of the distributed X-ray source ~~and the gantry~~ about the heart is approximately a multiple of the cardiac period.

6.   (original)   The method as recited in claim 2, wherein interpolating the projection data set comprises reducing statistical noise in the projection data set.

7.   (original)   The method as recited in claim 6 further comprising reducing an X-ray dose applied to the volume of interest in response to the reduction in statistical noise.

8.   (cancelled).

9.   (currently amended)   A computer program, provided on one or more computer readable media, for acquiring a projection data set, comprising:
        a routine for rotating ~~a gantry comprising~~ a distributed X-ray source about a volume of interest, wherein a rotational period of the <u>distributed X-ray source</u> ~~gantry~~ is greater than eight seconds and wherein the distributed X-ray source comprises a plurality of addressable X-ray focal spots;
        a routine for emitting X-rays from the distributed X-ray source; and
        a routine for acquiring a projection data set comprising a plurality of projections generated from the emitted X-rays.

10.   (currently amended)   The computer program as recited in claim 9, further comprising:
        a routine for generating a set of interpolated projections by interpolating the projection data set using a set of concurrently acquired phase data and the frequency content of the projection data set, wherein each interpolated projection characterizes the projection

data set at a view location of the <u>distributed X-ray source</u> ~~gantry~~ and at a particular time; and

a routine for reconstructing the set of interpolated projections to generate one or more images.

11.   (original)   The computer program as recited in claim 10, a further comprising:

a routine for associating two or more images to generate a volume rendering.

12.   (original)   The computer program as recited in claim 10, wherein the volume of interest comprises a heart having a cardiac period.

13.   (previously presented)   The computer program as recited in claim 12, wherein the routine for rotating the distributed X-ray source rotates the distributed X-ray source in a rotational period approximately equal to a multiple of the cardiac period.

14.   (original)   The computer program as recited in claim 10, wherein the routine for generating a set of interpolated projections reduces statistical noise in the projection data set.

15.   (original)   The computer program as recited in claim 14, further comprising a routine for reducing an X-ray dose applied to the volume of interest in response to the reduction in statistical noise.

16.   (cancelled).

17.   (currently amended)   A CT image analysis system, comprising:

~~a gantry comprising~~ a distributed X-ray source<u>, disposed on a gantry</u> ~~configured to rotate about a volume of interest,~~ <u>wherein the rotational period of the distributed X-ray</u>

source about a volume of interest is greater than [[in]] eight ~~or more~~ seconds, and wherein the distributed X-ray source comprises a plurality of addressable X-ray focal spots;

a detector configured to detect radiation emitted by the distributed X-ray source and to generate one or more signals responsive to the radiation, wherein the detector comprises a plurality of detector elements;

a system controller configured to control the X-ray source and to acquire a set of projection data during one or more rotations of the X-ray source about a dynamic object from one or more of the detector elements via a data acquisition system; and

a computer system configured to receive the set of projection data.

18.   (currently amended)   The CT image analysis system as recited in claim 17, wherein the computer system is further configured to generate a set of interpolated projections by interpolating the set of projection data using a set of concurrently acquired phase data and the frequency content of the set of projection data, wherein each interpolated projection characterizes the projection data set at a view location of the distributed X-ray source ~~gantry~~ and at a particular time and to reconstruct the set of interpolated projections to generate one or more images.

19.   (original)   The CT image analysis system as recited in claim 18, wherein the computer system is further configured to associate two or more images to generate a volume rendering.

20.   (original)   The CT image analysis system as recited in claim 18, wherein the dynamic object comprises a heart having a cardiac period.

21.   (previously presented) The CT image analysis system as recited in claim 20, wherein a rotational period of the distributed X-ray source is approximately a multiple of the cardiac period.

22.   (original)   The CT image analysis system as recited in claim 18, wherein generating a set of interpolated projections reduces statistical noise in the set of projection data.

23.   (previously presented) The CT image analysis system as recited in claim 22, wherein the computer system is further configured to reduce an X-ray dose applied to the volume of interest in response to the reduction in statistical noise.

24.   (cancelled).

25.   (currently amended)   A CT image analysis system, comprising:
    means for rotating a gantry comprising a distributed X-ray source about a volume of interest, wherein the rotational period of the distributed X-ray source is greater than [[in]] eight or more seconds, and wherein the distributed X-ray source comprises a plurality of addressable X-ray focal spots;
    means for emitting X-rays from the distributed X-ray source; and
    means for acquiring a projection data set comprising a plurality of projections generated from the emitted X-rays.

26.   (previously presented) The CT image analysis system as recited in claim 25, further comprising:
    means for generating a set of interpolated projections using a set of concurrently acquired phase data and frequency content of the projection data set;
    means for reconstructing the set of interpolated projections to generate one or more images.